Stephen A. Byrne
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December 15, 2003

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
LICENSEE EVENT REPORT (LER 2003-005-00)
FAILURE OF MASTER RELAY K507 DURING SOLID STATE PROTECTION SYSTEM TESTING

Attached is Licensee Event Report (LER) No. 2003-005-00, for the Virgil C. Summer Nuclear Station (VCSNS). The report describes a failure of Master Relay K507 During Solid State Protection System Testing and is being submitted in accordance with 10 CFR 50.73(a)(2)(vii) and 10 CFR 21.21.

Should you have any questions, please call Mr. Ron Clary at (803) 345-4757.

Very truly yours,

Stephen A. Byrne

JWP/SAB/dr
Attachment

c: N. O. Lorick
N. S. Carns
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DMS (RC-03-0248)

IE22

NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

Failure of Master Relay K507 During Solid State Protection System Testing

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	03	2003	2003	-005	- 00	12	15	2003	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	1
10. POWER LEVEL	100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)
20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	X OTHER Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	
20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)	
20.2203(a)(2)(v)	50.73(a)(2)(i)(B)	X 50.73(a)(2)(vii)	
20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)	
20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
R. B. Clary, Mgr., Nuclear Licensing	(803) 345-4757

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	JC	RelayxD	MidTex	Yes					

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On December 1, 2003, it was determined by the Senior Vice President, Nuclear Operations that the following event was reportable as a significant safety hazard.

On October 3, 2003, the V. C. Summer Nuclear Station (VCSNS) was performing solid state testing. The testing is in accordance with Surveillance Test Procedure (STP) 345.037, Solid State Protection System Actuation Logic and Master Relay Testing. At 1300, Master Relay K507, which actuates the Feed Water Isolation circuits upon Hi/Hi Steam Generator Water Level, failed to actuate. This component was a master relay with a paper wrapped coil, manufactured by MidTex (part number [P/N] 156-14D200). A Non-Conformance Notice (NCN 03-3099) was written, and the master relay was replaced on October 3, 2003.

The cause of the master relay failure was determined to be an open circuit in the coil resulting from corrosion caused by off-gassing of chlorine contamination from the paper used to wrap the coil, or the adhesive used to attach the paper to the coil. An investigation into other master relays at VCSNS revealed that three additional MidTex P/N 156-14D200 relays with paper wrapped coils were installed in the Solid State Protection System. Although none of these had actually failed, they were replaced during Refueling Outage 14. The majority of the MidTex P/N 156-14D200 relays installed at VCS have cloth wrapped coils, and showed no evidence of corrosion.

This event is being reported under 10 CFR 50.73(a)(2)(vii) and 10 CFR 21.21.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

PLANT IDENTIFICATION

Westinghouse - Pressurized Water Reactor

EQUIPMENT IDENTIFICATION

Solid State Protection System Master Relay K507

IDENTIFICATION OF EVENT

This event was identified during performance of Surveillance Test Procedure (STP) 345.037, Solid State Protection System Actuation Logic and Master Relay Testing. Master Relay K507 failed to actuate during the test. This condition was identified in Condition Evaluation Report (CER) 03-3099 as a Non-Conforming condition.

EVENT DATE

October 3, 2003
(Date of determination of significant safety hazard - December 1, 2003)

REPORT DATE

December 15, 2003

CONDITIONS PRIOR TO EVENT

The plant was in Mode 1, at 100% Power.

DESCRIPTION OF EVENT

On October 3, 2003, the V. C. Summer Nuclear Station (VCSNS) was performing solid state testing on the 'A' train. The testing is in accordance with Surveillance Test Procedure (STP) 345.037, Solid State Protection System Actuation Logic and Master Relay Testing. At 1300, Master Relay K507, which actuates the Feed Water Isolation circuits upon Hi/Hi Steam Generator Water Level, failed to actuate. This component was a master relay with a paper wrapped coil, manufactured by MidTex (part number [P/N] 156-14D200). MidTex has no address, as they are no longer in business.

A Non-Conformance Notice (NCN 03-3099) was written, and the master relay was replaced on October 3, 2003.

The affected master relay was sent to Pentas, Inc. for a Root Cause of Failure Analysis.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

The failure analysis results attributed the failure to be an open circuit in the coil resulting from corrosion caused by off-gassing of chlorine contamination from the paper used to wrap the coil, or the adhesive used to attach the paper to the coil. Another MidTex P/N 156-14D200 relay with a paper wrapped coil, sent to Pentas, Inc. for follow-up analysis, showed evidence of the same type of corrosion. Therefore, this failure is considered to be a manufacturing defect in a basic component, which could cause a loss of safety function.

An investigation into other master relays at VCSNS revealed that three additional MidTex P/N 156-14D200 master relays with paper wrapped coils were installed in 'A' Train Solid State Protection System cabinet XPN7010. Although none of these had actually failed, they were replaced with Potter & Brumfield relays during Refueling Outage 14 (November 2003). The majority of the MidTex P/N 156-14D200 relays installed at VCS have cloth wrapped coils, and showed no evidence of corrosion.

This event is being reported under 10 CFR 50.73(a)(2)(vii) and 10 CFR 21.21.

ANALYSIS OF EVENT

Although the redundant train for K507, which had a different type of master relay, was operable and could have actuated the Feed Water Isolation Valves on a Hi/Hi Steam Generator Water level, VCSNS has determined that this condition should be reported under 10 CFR 50.73(a)(2)(vii), since multiple components were potentially affected in various trains and systems by the corrosion due to off-gassing.

CORRECTIVE ACTIONS

The potentially affected master relays have been identified and replaced with Potter & Brumfield relays.

PRIOR OCCURRENCES

None